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## Impact of comorbid obsessive-compulsive disorder on suicidality in patients with bipolar disorder

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Impact of comorbid Obsessive-Compulsive Disorder on suicidality in patients with Bipolar Disorder

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**Highlights**

- Obsessive-Compulsive Disorder (OCD) is a common comorbid condition in patients with Bipolar Disorder;
- OCD comorbidity is associated with higher severity of Bipolar Disorder;
- OCD comorbidity is not associated with an increased risk of suicide in Bipolar Disorder;
- OCD comorbidity is a risk factor for violent suicide in patients with Bipolar Disorder.

**Title:**

Impact of comorbid Obsessive-Compulsive Disorder on suicidality in patients with Bipolar Disorder.

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**Abstract**

This study evaluated the impact of comorbid OCD on suicide attempt risk and suicide methods in 990 patients with main diagnosis of BD. Two hundred and one patients (20.3%) had lifetime comorbid OCD. No significant differences were found comparing rates of lifetime suicide attempts between patients with or without comorbid OCD (30.3% vs 24.6%). In the subgroup of patients with concomitant OCD more subjects performed suicide attempts with violent methods (48.3% vs 28.7%).

Therefore, our results suggest a correlation between comorbid OCD and violent suicide attempts. This finding is worthy of interest and deserves to be explored by further studies.

## **Keywords**

Bipolar illness; OCD; Suicide.

## **1. Introduction**

Obsessive-Compulsive Disorder (OCD) is found to be comorbid with Bipolar Disorder (BD) with prevalence rates of 10-15% (Ferentinos et al., 2020) and is known to negatively affects the course of BD, in terms of clinical features, comorbidities and treatment response (Maina et al., 2007; Magalhaes et al., 2010; Shashidhara et al., 2015; Jeon et al., 2018). The majority of studies found OCD to increase the suicide risk in BD patients, but available data are few and affected by important methodological limitations (Amerio, 2019). Moreover, to our knowledge no study investigated whether comorbid OCD can affect the methods and the lethality of suicide attempts. This is a noteworthy issue: BD patients performing attempts with violent methods need to be precociously recognised, since these methods are associated with the highest level of lethality (Cassidy, 2011). In our recent study on a sample of BD patients the factors related to violent suicide were male gender and abdominal obesity. While having comorbid psychiatric disorders increased the risk of suicide attempts in BD patients, it was not significantly related to violent methods. However, psychiatric comorbidity was considered such as a unique variable, and BD-OCD subgroup was not taken into consideration (Rosso et al., 2020).

Therefore, the purpose of the present study is to deepen the impact of OCD comorbidity on suicide attempt rates and suicide methods in BD patients.

## **2. Material and methods**

### *2.1 Study design and procedures*

Data derived from a cross-sectional observational study involving in- and outpatients with a principal diagnosis of BD type I, II or Not Otherwise Specified (NOS) (DSM-IV-TR, DSM-5) (American Psychiatric Association, 2000; American Psychiatric Association, 2013) consecutively admitted or referring to the Psychiatric Unit of San Luigi Gonzaga Hospital in Orbassano (University of Turin, Italy) from 2014 and to Mental Health Department of Alba and Bra (Cuneo, Italy) from 2016. All subjects had given a written informed consent to have their clinical data potentially used for research purposes (provided that these data are anonymously treated). The present analysis is part of an

independent observational study on clinical features of mood disorders which has been reviewed and approved by the local Ethical Committee.

Certified psychiatrists or residents in psychiatry supervised by senior psychiatrists performed the clinical assessment of patients. The assessment consisted in a semi-structured interview that was used to collect socio-demographic data, clinical features of BD and comorbid psychiatric disorders including OCD. Patient's clinical charts were then reviewed by senior psychiatrists with proven clinical and research experience in both BD and OCD.

History of suicide attempt, defined as a self –destructive behavior with the intention of ending one's life, independently of the resulting damage (O'Carroll et al., 1996), was retrospectively assessed for each patient. According to Stenbacka et al. (2015), the suicide attempt method was defined violent (hanging, shooting, jumping from heights, moving train, cutting, drowning) or nonviolent (poisoning). Individuals who had made more than one attempt were classified according to the most violent attempt.

## 2.2 Statistical analysis

Socio-demographic and clinical features of the patients were summarized as mean and standard deviation (SD) for continuous variables and frequency and percentage for categorical variables.

Patients were grouped according to whether they had a comorbid OCD. Comparisons were performed using  $\chi^2$  tests for categorical variables and ANOVA for continuous variables. The results from every statistical comparison of the treatment groups were presented as 2-sides p values rounded to 3 decimal places. The criterion for statistical significance in all comparison was a p value < 0.05.

Moreover, binary logistic regression (LogReg) was performed in order to investigate the association between violent suicide and comorbidity with OCD: the dichotomous variable of suicide method (0=nonviolent/1=violent) was set as dependent variable.

All statistical analyses were performed by SPSS software version 26.0.

## 3 Results

The demographic and clinical characteristics of the sample (N=990) are given in Table 1.

Two hundred and one patients (20.3%) had a lifetime comorbid OCD: the differences between patients with and without comorbid OCD are shown in Table 1. Focusing on suicidal behavior, no significant differences were found comparing rates of lifetime suicide attempts between patients with or without comorbid OCD (30.3% vs 24.6%; p: 0.095); on the other hand, in the subgroup of patients with comorbid OCD more subjects performed suicide attempts employing violent methods (48.3% vs 28.7%; p: 0.006).

Binary LogReg was performed setting suicide method as dependent variable. Independent variables were age, gender, marital status, type of BD, age at BD onset, comorbid OCD, comorbid panic disorder, comorbid addictive disorder and comorbid personality disorder. The LogReg analysis confirmed the significant correlation between comorbid OCD and violent suicide attempts (ORa: 2.930 [1.323-6.492]; p: 0.008); among other independent variables, only male gender was significantly associated with violent attempts (ORa: 4.018 [2.113-7.638]; p: <0.001).

#### 4 Discussion

The aim of this study was to evaluate in a large naturalistic sample of patients with BD the impact of OCD comorbidity on suicidal behavior.

In our BD sample about one in five patients had a lifetime comorbid OCD, while the most recent reviews on this topic reported pooled prevalences of 10-15% (Yapici Eser et al., 2018; Ferentinos et al., 2020). The main reason for this discrepancy may be that our Psychiatric Unit is specialized in the treatment of both BD and OCD, therefore patients suffering from these disorders are often referred from other centers for consulting. OCD comorbidity was shown to be associated with higher severity of illness (lower mean age at onset, higher rates of lifetime psychiatric disorders): this finding was expected and confirmed previous studies (Maina et al., 2007; Magalhaes et al., 2010; Shashidhara et al., 2015; Jeon et al., 2018). Besides, the disease severity explains the higher rate of singles found in the BD-OCD patient subgroup, as a worse course of illness is known to be associated with greater social impairment. As regards to the gender distribution, in our sample the prevalence of OCD comorbidity was greater in men: this finding is inconsistent with previous studies, that reported no gender differences or higher rates in women (Saunders et al., 2012; Ferentinos et al., 2020).

Focusing on the impact of comorbid OCD on suicidal behavior, no significant differences were found in lifetime suicide attempts between patients with and without comorbid OCD, although the rates were slightly higher in BD-OCD patients. On the other hand, a significant correlation emerged between comorbid OCD and violent suicide attempts; LogReg analysis, controlled for socio-demographic (eg, gender) and clinical (eg, BD type) variables, confirmed this relationship. A possible explanation for the link between OCD and violent suicide is that subjects with OCD might be more methodical in planning the attempt and, therefore, choose a method with a more certain end. Our findings are in line with recent studies that revealed a significant correlation between OCD and suicidality, questioning the historical prejudice that OCD is associated with a relatively low suicide risk (Albert et al., 2019). These results support the need of mood stabilization as the first objective in BD-OCD patients. Lithium may be preferred because of its proven anti-suicidal effect (Smith and Cipriani, 2017); instead, the use of antipsychotics known to worsen OC symptoms, such as clozapine,

and in general the use of high doses of antipsychotics during euthymic or depressive phases should be careful.

Among the independent variables entered in the LogReg analysis, male gender was found to be associated with violent attempts, consistently with previous studies (D'Ambrosio et al., 2012; Rosso et al., 2020).

Our study has several limitations, mostly due to the cross-sectional design. First, in our research we analyzed lifetime suicide attempts, but the sample does not include completed suicides, meaning that we are unable to test whether the results are generalizable to suicide deaths; then suicidal intent to die is difficult to ascertain retrospectively and information could be biased. Second, the sample is heterogeneous in terms of clinical characteristics (eg, BD type, psychiatric comorbidities) and the high rate of comorbid OCD may be mainly due to a recruitment bias, as mentioned above. Moreover, pharmacological treatments at the time of suicide attempts were not collected.

To our knowledge, this is the first study to suggest the correlation between comorbid OCD and higher risk of violent suicide in patients with BD; this finding needs to be explored by further methodologically rigorous research, in order to ameliorate our ability to predict long-term individualized risk and to choose tailored treatments for specific subgroups of patients early.

#### **Contributors:**

Giuseppe Maina, Gianluca Rosso and Umberto Albert designed the study. Enrico Pessina, Azzurra Martini and Elena Aragno collected patients' data and managed the literature searches. Gianluca Rosso and Gabriele Di Salvo analyzed the data. Gabriele Di Salvo wrote the draft. All authors have approved the final manuscript.

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#### **CONFLICT OF INTEREST**

The paper is not under review elsewhere. All authors declare that there are not any actual or potential conflict of interest including any financial, personal or other relationship with other people



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**Table 1:** Socio-demographic and clinical characteristics of the total sample (n = 990) and differences between BD patients (n = 789) and BD-OCD patients (n = 201).

Characteristics	Total sample (n = 990)	BD patients (n= 789)	BD-OCD patients (n=201)	F/ $\chi^2$	df	p
Age (years), mean $\pm$ <i>sd</i>	49.0 $\pm$ 15.6	50.7 $\pm$ 15.5	42.3 $\pm$ 14.1	48.092	1	<0.001
Education (years), mean $\pm$ <i>sd</i>	11.9 $\pm$ 4.1	11.8 $\pm$ 4.2	12.2 $\pm$ 3.6	1.556	1	0.213
Sex, n (%)						
Male	417 (42.1)	313 (39.7)	104 (51.7)	9.574	1	0.002
Female	573 (57.9)	476 (60.3)	97 (48.3)			
Marital status, n (%)						
Single	324 (32.7)	227 (28.8)	97 (48.3)	35.193	3	<0.001
Married	476 (48.1)	398 (50.4)	78 (38.8)			
Divorced	134 (13.5)	109 (13.8)	25 (12.4)			
Widowed	56 (5.7)	55 (7.0)	1 (0.5)			
Working level, n (%)						
Student	56 (5.7)	37 (4.7)	19 (9.5)	195.564	7	<0.001
Blue collar	111 (11.2)	244 (31.0)	45 (22.4)			
White collar	289 (29.2)	85 (10.8)	26 (12.9)			
Housewife	79 (8.0)	64 (8.1)	15 (7.5)			
Unemployed	203 (20.5)	166 (21.1)	37 (18.4)			
Retired	209 (21.1)	192 (24.4)	17 (8.5)			
Other	43 (4.3)	1 (0.1)	42 (20.9)			
Bipolar disorder, type, n (%)						
Bipolar I	412 (41.6)	335 (42.5)	77 (38.3)	3.134	4	0.536
Bipolar II	546 (55.2)	426 (54.0)	120 (59.7)			
Bipolar NOS	32 (3.2)	28 (3.5)	4 (2.0)			
Age of onset (years), mean $\pm$ <i>sd</i>	28.7 $\pm$ 11.9	29.8 $\pm$ 12.6	24.4 $\pm$ 7.5	33.951	1	<0.001
Lifetime suicide attempt, n (%)	255 (25.8)	194 (24.6)	61 (30.3)	2.779	1	0.095
Lifetime suicide attempt with violent methods, n (%)	79 (33.8)	50 (28.7)	29 (48.3)	7.662	1	0.006
Lifetime psychiatric comorbidities, n (%)	436 (44.0)	310 (39.3)	126 (91.3)	127.559	1	<0.001
Panic Disorder	115 (11.6)	56 (7.1)	59 (29.4)	77.283	1	<0.001
Social Anxiety Disorder	30 (3.0)	11 (1.4)	19 (9.5)	35.402	1	<0.001
Generalized Anxiety Disorder	18 (1.8)	12 (1.5)	6 (3.0)	1.924	1	0.165
Feeding and Eating Disorders	42 (4.2)	23 (2.9)	19 (9.5)	16.854	1	<0.001
Disruptive, Impulse-Control, and Conduct Disorders	18 (1.8)	5 (0.6)	13 (6.5)	30.542	1	<0.001
Substance-Related and Addictive Disorders	184 (18.6)	132 (16.7)	52 (25.9)	8.845	1	0.003
Personality disorders	160 (16.2)	64 (8.1)	96 (47.8)	185.861	1	<0.001
Family history of psychiatric disorders, n (%)	659 (66.6)	514 (65.1)	145 (72.1)	3.520	1	0.061

NOS: Not Otherwise Specified